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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,485	03/09/2001	Donald Henry Willis	PU010032	7267

7590 08/05/2004

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EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,485

Applicant(s)

WILLIS ET AL.

Examiner

Leonid Shapiro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-11 and 14-29 is/are rejected.
- 7) ☒ Claim(s) 3-4, 12-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 6, 11, 16, 21, 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al. (US Patent No. 4,523,230) in view of Okada et al. (US Patent No. 5,247,169) and Levine (US Patent No. 4,499,497).

As to claim 1, Carlson et al. teaches a method for reducing sparkle artifact in a liquid crystal imager (See Col. 13, Lines 46-50) by applying combined video signal (summer) to the imager reducing effects of orthogonal fields in adjacent pixels (sparkle in the Carlson et al. reference and in the preamble) of the imager (See Fig. 2a, Col. 8, Lines 24-62 and Col. 18, Lines 29-49).

Carlson et al. does not show step of dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal, low pass filtering lower brightness level signal, delaying higher brightness level signal to match a processing delay incurred by low pass filtering.

Okada et al. teaches dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal (column 2, lines 17-33), low pass filter (See Fig. 1, item 10-11) arrangement and a delay matching circuit (See Fig. 1, item 15-16, 18) are for independently low pass filtering rising transients and falling transients in low brightness signal to reduce adjacent pixel interdependence, and the delay matching

circuit for the high brightness signal (See Fig. 1-3, items 10-11, 15-16, 18, S7, Col. 7, Lines 5-16 and Col. 3, Lines 4-13).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Okada et al. teaching into the Carlson et al. system in order to provide an image signal that causes no erroneous determination due to noise (See Col. 1, Lines 62-64 in the Okada et al. reference).

Carlson et al. and Okada et al. do not teach combining low pass filtered lower brightness level signal and delay matched higher brightness level signal to generate modified video signal yielding reduced sparkle artifacts in imager.

Levine teaches combining low brightness video signal and delayed signal to provide fully processed video signal (See Fig. 1-2, items 27-29, in description See Col. 3, Lines 44-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Levine approach for reducing sparkle artifacts in the Carlson et al. and Okada et al. apparatus to improve signal-to-noise ratio (See Col. 1, Lines 35-40 in Levine reference).

As to claim 11, Carlson et al. teaches a circuit for reducing sparkle artifact in a liquid crystal imager (See Col. 13, Lines 46-50) to generate a modified video signal yielding reduced sparkle artifacts in imager (See Fig. 2a, Col. 8, Lines 24-62 and Col. 18, Lines 29-49).

Carlson et al. does not show means for dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal, means for low pass

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filtering lower brightness level signal, means for delaying higher brightness level signal to match a processing delay incurred by low pass filtering.

Okada et al. teaches dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal (column 2, lines 17-33), low pass filter (See Fig. 1, item 10-11) arrangement and a delay matching circuit (See Fig. 1, item 15-16, 18) are for independently low pass filtering rising transients and falling transients in low brightness signal to reduce adjacent pixel interdependence, and the delay matching circuit for the high brightness signal (See Fig. 1-3, items 10-11, 15-16, 18, S7, Col. 7, Lines 5-16 and Col. 3, Lines 4-13).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Okada et al. teaching into the Carlson et al. system in order to provide an image signal that causes no erroneous determination due to noise (See Col. 1, Lines 62-64 in the Okada et al. reference).

Carlson et al. and Okada et al. do not teach means for combining low pass filtered lower brightness level signal and delay matched higher brightness level signal to generate modified video signal yielding reduced sparkle artifacts in imager.

Levine teaches combining low brightness video signal and delayed signal to provide fully processed video signal (See Fig. 1-2, items 27-29, in description See Col. 3, Lines 44-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Levine approach for reducing sparkle artifacts in the Carlson et

al. and Okada et al. apparatus to improve signal-to-noise ratio (See Col. 1, Lines 35-40 in Levine reference).

As to claim 21, Carlson et al. teaches a circuit for reducing sparkle artifact in a liquid crystal imager (See Col. 13, Lines 46-50), and generating a modified video signal yielding reduced sparkle artifacts in images (See Fig. 2a, Col. 8, Lines 24-62 and Col. 18, Lines 29-49).

Carlson et al. does not show decomposer for dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal, low pass filter for processing lower brightness level signal, low pass filtered lower brightness level signal being delayed; a delay circuit for higher brightness level signal matched to processing delay in low pass filter.

Okada et al. teaches dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal (column 2, lines 17-33), low pass filter (See Fig. 1, item 10-11) arrangement and a delay matching circuit (See Fig. 1, item 15-16, 18) are for independently low pass filtering rising transients and falling transients in low brightness signal to reduce adjacent pixel interdependence, and the delay matching circuit for the high brightness signal (See Fig. 1-3, items 10-11, 15-16, 18, S7, Col. 7, Lines 5-16 and Col. 3, Lines 4-13).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Okada et al. teaching into the Carlson et al. system in order to provide an image signal that causes no erroneous determination due to noise (See Col. 1, Lines 62-64 in the Okada et al. reference).

Carlson et al. and Okada et al. do not teach an algebraic circuit for combining low pass filtered lower brightness level signal and delay matched higher brightness level signal.

Levine teaches combining low brightness video signal and delayed signal to provide fully processed video signal (See Fig. 1-2, items 27-29, in description See Col. 3, Lines 44-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Levine approach for reducing sparkle artifacts in the Carlson et al. and Okada et al. apparatus to improve signal-to-noise ratio (See Col. 1, Lines 35-40 in Levine reference).

As to claims 6, 16, 25, Okada et al teaches step of delaying higher brightness level signal by time delay (See Col. 2, Lines 17-33).

2. Claims 2, 5, 7-10, 14-15, 17-20, 22-24, 26-29 rejected under 35 U.S.C. 103(a) as being unpatentable over Carlson et al., Okada et al. and Levine as aforementioned in claim 1, 11 and 21 in view of Jang (US Patent No. 5,361,094).

As to claims 5, 15, 24, Carlson et al., Okada et al. and Levine do not teach step of low pass filtering lower brightness level signal in accordance with normalized 1:2:1 Z-transform, lower brightness level signal being thereby subjected to a time delay.

Jang shows how to use normalized Z-transform in CCD color camera with gamma correction (See Fig. 4, items 50, 56, 56a, Col. 3, Lines 46-57).

It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate Jang approach for reducing sparkle artifacts in the Carlson et al., Okada et al. and Levine apparatus to improve signal-to-noise ratio.

Regarding claims 2 and 14, Okada, Carlson and Levine do not teach a gamma table.

Jang teaches a video signal processing circuit of a CCD-type color video camera that includes a gamma correction circuit, delay circuit, a chrominance signal processor and luminance signal processor (see Abstract; column 3, lines 26-45, figure 3 at 20).

It would have been obvious to a person of ordinary skill in the art to incorporate Jang teaching into Carlson et al., Okada et al. and Levine system in order to improve the picture quality of a video device (column 2, lines 28-32).

Regarding **claims** 22-23, Carlson et al., Okada et al. and Levine do not teach a gamma table.

Jang teaches a video signal processing circuit of a CCD-type color video camera that includes a gamma correction circuit, delay circuit, a chrominance signal processor and luminance signal processor (see Abstract; column 3, lines 26-45, figure 3 at 20).

It would have been obvious to a person of ordinary skill in the art to incorporate Jang teaching into Carlson et al., Okada et al. and Levine system in order to improve the picture quality of a video device (column 2, lines 28-32).

As to claims 7-10, 17-20 and 26-29 Carlson et al., Okada et al. and Levine do not show applying sparkle reducing steps for luminance signal for picture; delaying chrominance signals for picture and generating a plurality of video drive signals from modified luminance signal and delayed chrominance signals.

Carlson et al., Okada et al. and Levine teach to decompose signal in high and low brightness signal, low pas filter low brightness signal and delay match high brightness signals and then combine both of them.

Jang teaches to separate signal in two chrominance and luminance signals (See Fig. 3, items 42,44,46, Col. 3, Lines 33-43). Luminance is a brightness signal which depends on brightness level will be treated by Carlson et al., Okada et al. and Levine as discussed above. Chrominance signal being color data do not need processing for the same reasoning as high brightness signal.

It would have been obvious to one of ordinary skill in the art at the time of invention to treat luminance signal with low brightness signal and chrominance signal, and high brightness luminance signal and to incorporate Jang separation approach for reducing sparkle artifacts in the Carlson et al., Okada et al. and Levine apparatus to improve signal-to-noise ratio (See Col. 1, Lines 35-40 in Levine).

Allowable Subject Matter

4. Claims 3-4, 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

Relative to claims 3-4, 12-13, the major difference between the teaching of the prior art of record (US patent No. 4,523,230 to Carlson et al., US Patent No.

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5,5,247,169 to Okada et al. and US Patent No. 4,499,497 to Levine) and the instant invention is that the said prior art **does not teach** exact configuration of dividing means, including a register, a comparator, an algebraic circuit, a clipping circuit, a first and second gates.

Response to Amendment

6. Applicant's arguments filed on 05-21-04 with respect to claims 1-2, 5-11, 14-29 have been considered but are moot in view of the new ground(s) of rejection.

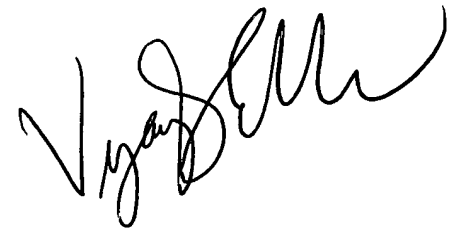
Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ls 07-28-04

A handwritten signature in black ink, appearing to read 'Vijay Shankar', written in a cursive style.

VIJAY SHANKAR
PRIMARY EXAMINER